	Application No.	Applicant(s)
Notice of Allowability	10/689,553	MORI ET AL.
	Examiner	Art Unit	
	Demetrius R. Pretlow	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.·

1. ☒ This communication is responsive to *application filed October 21, 2003*.

2. ☒ The allowed claim(s) is/are *1-16*.

3. ☒ The drawings filed on *17 June 2004* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

        Paper No./Mail Date _____ .

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with David Pitcher on March 31, 2005 and John Garvey on April 14, 2005.

The application has been amended as follows:

Please replace the abstract with the following.

ABSTRACT OF THE DISCLOSURE

A method and apparatus for generating test sequences for communication protocols that inputs data of finite state machines (FSM) representing the specification of the communication protocols, converts the test sequence generation problem to the satisfiability problem (SAT problem), and generates test sequences for communication protocols by solving the SAT problem. The method converts the test sequence generation problem to the SAT problem by modifying the FSM and describing the test sequence generation problem using a conjunctive normal form formula based on the modified FSIM. By considering multiple input/output (UID) sequences and overlapping sequences, the method generates minimum length test sequence to check whether the states described in the specification of the protocol exist in the implementation of the FSM.

In claim 1, line 3, before "step" change --the-- to --a-- .

In claim 1, line 3, after "inputting" change --the-- to --a-- .

In claim 1, line 3, after "which" delete --the-- .

In claim 1, line 3, before "finite" delete --the-- .

In claim 1, line 4, after "representing" change --the-- to --a-- .

In claim 1, line 6, before "step" change --the-- to --a-- .

In claim 1, line 6, before "test" change --the-- to --a-- .

In claim 1, line 7, after "to" change --the SAT-- to --a satisfiability (SAT) -- .

In claim 1, line 8, before "step" change --the-- to --a-- .

In claim 4, line 4, before "step" change --the-- to --a-- .

In claim 4, line 5, before "step" change --the-- to --a-- .

In claim 5, line 4, before "step" change --the-- to --a-- .

In claim 5, line 5, before "step" change --the-- to --a-- .

In claim 5, line 7, after "comprising" change --the-- to --a-- .

In claim 5, line 8, change "the UIO" to --a unique input/output-- .

In claim 5, line 8, after "of" delete --the-- .

In claim 7, line 4, before "step" change --the-- to --a-- .

In claim 7, line 5, before "step" change --the-- to --a-- .

In claim 7, line 8, before "subequence" change --the-- to --a-- .

In claim 9, line 3, before "section" change --the-- to --a-- .

In claim 9, line 3, after "inputting" change --the-- to -- a-- .

In claim 9, line 3, after "input" delete --data-- .

In claim 9, line 3, before "finite" delete --the-- .

In claim 9, line 4, after "representing" change --the-- to --a-- .

In claim 9, line 6, before "section" change --the-- to --a-- .

In claim 9, line 6, before "test" change --the -- to --a-- .

In claim 9, line 7, change "the SAT" to -- a satisfiability (SAT) -- .

In claim 9, line 8, before "section" change --the-- to --a-- .

In claim 12, line 4, before "section" change –the-- to –a-- .

In claim 12, line 5, before "section" change –the-- to –a-- .

In claim 13, line 4, before "section" change –the-- to –a-- .

In claim 13, line 5, before "section" change –the-- to –a-- .

In claim 13, line 8, after "to" change –the-- to --a-- .

In claim 13, line 9, change –UIO-- to --unique input/output -- .

In claim 14, line 3, before "each" delete --the-- .

In claim 15, line 4, before "section" change –the-- to –a-- .

In claim 15, line 5, before "section" change –the-- to –a-- .

In claim 15, line 8, after "to" change –the-- to --a-- .

Allowable Subject Matter

Claims 1-16 are allowed.

The best prior art of record, particularly De Moura et al. (US 2004/0019468)

teach deciding satisfiability of formulas where the formula contains variables with non-

infinite domains. However De Moura et al. does not teach the following claim limitations.

The primary reason for the allowance of claims 1-8 is the inclusion of the method steps

of a step of inputting a specification in which data of finite state machines (FSM)

representing a specification of the communication protocols is inputted; a step of

converting a test sequence generation problem which converts the test sequence

generation problem to a satisfiability (SAT) problem; and a step of generating test

sequences for communication protocols in which the SAT problem is solved and the test

sequences for communication protocols are generated. It is these steps found in each

of the claims, as it is claimed in the combination, that has not been found, taught or

suggested by the prior art of record which makes these claims allowable over the prior

art.

The primary reason for the allowance of claims 9-16 is the inclusion of the limitations of

a section of inputting a specification which input data of finite state machines (FSM)

representing a specification of the communication protocols; a section of converting a

test sequence generation problem which converts the test sequence generation

problem to a satisfiability SAT problem; and a section of generating test sequences for

communication protocols which solves the SAT problem and generates the test

sequences for communication protocols. It is these limitations found in each of the

claims, as they are claimed in the combination, that has not been found, taught or

suggested by the prior art of record which makes these claims allowable over the prior

art.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Demetrius R. Pretlow whose telephone number is (703)

272-2278. The examiner can normally be reached on Mon.-Fri. 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Demetrius R. Pretlow   4/19/05

Patent Examiner

MICHAEL NGHIEM
PRIMARY EXAMINER